Engaging Knowledge Users in Knowledge Mobilisation Research: A Scoping Review

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Contents

Abstract

This thesis examines the roles and engagement of knowledge users in knowledge mobilisation (KMb) research on Canadian K-12 teaching and education policy. Research on and around KMb has grown in the past decade. Thus, it is timely to re-evaluate if current knowledge producer-user relationships in KMb research feature the mediating variables or recursive elements promulgated as best practices in KMb research.

A scoping review was conducted to identify the profile of knowledge users, map current KMb research in terms of engagement of knowledge users and account for any changes to their roles in the research process. Twenty-eight relevant studies were identified and contextual data and frequency of engagement of knowledge users were collected and analysed.

Findings indicate that a diverse group of knowledge users are engaged in KMb research. Knowledge users were most frequently engaged during the search and data collection phase of the research process. Having a trusting and honest relationship between knowledge producers and users was the most common enabler for positive user engagement. Conversely, the lack of time and resources was found to be a common barrier to quality engagement with knowledge users. The review suggests that both the intent and frequency of engagement of knowledge users are critical factors to consider in KMb research in education.

Resume

Cette thèse examine les rôles et l'engagement des utilisateurs des connaissances dans la recherche sur la mobilisation des connaissances (MdC) sur la politique canadienne en matière d'enseignement et d'éducation de la maternelle à la 12e année. La recherche sur et autour du MdC s'est développée au cours de la dernière décennie. Ainsi, il est temps de réévaluer si les relations actuelles entre le producteur et l'utilisateur de connaissances dans la recherche MdC comportent les variables médiatrices ou les éléments récursifs promulgués comme les meilleures pratiques dans la recherche MdC.

Une étude de la portée a été mené pour identifier le profil des utilisateurs des connaissances, tracer la recherche actuelle en matière de MdC en termes d'engagement des utilisateurs des connaissances et compter pour de tout changement apporté à leurs rôles dans le processus de recherche. Vingt-huit études pertinentes ont été identifiées et les données contextuelles et la fréquence d'engagement des utilisateurs des connaissances ont été collectées et analysées.

Les résultats indiquent qu'un groupe diversifié d'utilisateurs des connaissances est engagé dans la recherche sur la MdC. Les utilisateurs des connaissances étaient impliqués le plus souvent pendant la phase de recherche et de collecte de données du processus de recherche. Avoir une relation de confiance et honnête entre les producteurs de connaissances et les utilisateurs était le catalyseur le plus courant pour un engagement positif des utilisateurs. Inversement, le manque de temps et de

ressources s'est avéré être un obstacle courant à un engagement de qualité avec les utilisateurs des connaissances. Cette revue semble indiquer que l'intention et la fréquence d'engagement des utilisateurs des connaissances sont des facteurs critiques à considérer dans la recherche sur le MdC en éducation.

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The LORD is my helper; I will not be afraid.

Hebrews 13:6

Contribution of Authors

The author, Sengalrayan Bernadine Wilhelmina, conceived the presented idea, designed the review strategies, collected the data, and performed the analysis. The author wrote each chapter of the paper. Revisions and editing were done in partnership with supervisor Dr Blane Harvey.

Chapter 1: Introduction

I want you to imagine an education researcher named Connie. Through empirical research and evidence gathering, Connie found that eating bananas improves students' grammar. After uncovering such a revelation, Connie writes a journal article which is published in the *International Journal of Fruits and Grammar*. But Connie realises that academic journals are hardly ever read by non-academic knowledge users, those that would be personally involved in bringing bananas into the classroom. So, Connie takes the extra effort to write a summarised single-page write-up about her research and sends it to schools. Although many schools are interested in the concept, some schools question how to apply bananas in the classroom. Do they cut the banana? Do they peel the banana? Do they give the students the banana before, during or after learning grammar? Do they eat a whole bunch within a single semester? Some schools reply to Connie that the ministry of education, through the school boards, has recently mandated the use of grapes in the classroom. Upon receiving this piece of information, Connie approaches the ministry of education and school boards to discuss the findings of her research. The ministry informs Connie that they have an existing contract with a vineyard to provide grapes for the upcoming semester and they have no budget to change to bananas in the near future, despite the quality of her findings.

If Connie had approached and engaged teachers during her research, she might have had teachers who would not only understand how to use bananas in the classroom, but also be a resource to help outreach and teach other teachers about how to use bananas in the classroom. Teachers might have informed her that knives

are not common classroom stationery and peeling would be more suitable over cutting the bananas. If Connie had spoken to a ministry representative or a member of the school board, they might have informed her during her research formulation about the impending introduction of grapes to the classroom. She might also have had the opportunity to learn that certain school boards were willing to introduce a fruit salad instead, allotting school resources to include both grapes and bananas. The steps that Connie could have taken to engage, outreach and tailor the findings of her research to the people who would use her research is what knowledge mobilisation is about.

Knowledge mobilisation (KMb) is the movement and application of research knowledge into policy and practice. But that definition oversimplifies the series of complex social processes and collaboration that are needed to move, translate, promote, and facilitate the use of research knowledge into spheres of policy and practice. KMb promotes the exchange of ideas and building of connections between those who produce knowledge and those who utilise that knowledge to inform classroom practice and policy decisions to meet complex problems in K-12 education.

Slightly more than a decade ago, the Canadian Council on Learning and the Social Sciences and Humanities Research Council (SSHRC) commissioned a review of the state of the field of KMb in learning at that time. The review (Levin, 2008) laid out key strengths and weaknesses of KMb conceptions and practices. It highlighted growing KMb learning communities and efforts to improve research and practice

connections, both locally and globally. Among key elements of understanding KMb were that “the relationship between knowledge and use runs in both directions,” and that personal connections between producers and users “remain the most powerful vehicle for moving evidence into practice” (Levin, 2008, p. 8). However, the review also found that many KMb process frameworks were linear process-product models that “seem to give dominance to the work of researchers” (Levin, 2008, p. 13), with some lacking or leaving little regard for mediating variables or recursive elements (Levin, 2008). This misalignment of KMb with the priorities of academia is echoed in other empirical evidence (Bielak et al., 2008; Smith, 2010).

In their updated guidelines for effective KMb, SSHRC defines KMb as “(t)he reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users … in such a way that may benefit users and create positive impacts … and, ultimately, has the potential to enhance the profile, reach and impact of social sciences and humanities research” (SSHRC, 2020). This definition suggests that the movement of any knowledge requires a synergistic relationship between the knowledge producer and the knowledge user. It becomes important that we explore and document the current relationship between education researchers and those who use the knowledge produced. I consider a knowledge user to be any person who would use knowledge produced by research, but whose primary role might not be directly involved in research, such as teachers, parents, principals, school boards, and policymakers. It is important to note here that although knowledge producers and users play distinctive roles in KMb, the role does not equate to a job title. So, while a teacher is a common knowledge user in education research, a teacher, either leading or being

part of a research group, can also be a knowledge producer. If we considered knowledge to be socially constructed (Cooper et al., 2009; Levin, 2008), it makes KMb in education contexts particularly tenuous, with multiple proverbial ‘cooks in the kitchen’, i.e. students, teachers, parents, principals, school boards, policymakers and researchers. Education researchers, practitioners and policymakers represent separate groups with their own definitions and expectations of what research is and how research should be applied (Mills et al., 2019).

When research work is siloed away from people who use research findings, it creates misalignments between research and practice (Bielak et al., 2008; Cooper et al., 2018; Ingstrup et al., 2021), poor articulation of research findings and practice/policy priorities (Cooper et al., 2018), and structural barriers that inhibit positive change in classrooms (Snow, 2015). I believe that a deliberate and direct engagement between education researchers and all who are involved in K-12 classroom policy and practice could be highly advantageous to uncovering different forms of evidence and knowledge, resulting in an improved quality of impactful research. Insights from educational research can lead to powerful changes in education policy and classroom practice (Nutley et al., 2007; Levin, 2008). A linear model of knowledge transfer from producer to user robs knowledge users of a role in shaping and responding to research that may ultimately affect their practice. Therefore, we need to understand KMb not as a static process, but a partnership between many parties (Cooper et al., 2009).

Situating Myself

I worked as part of a KMb unit at an education research office of a national teacher education institute. Much of my work was focused on research translation and dissemination, improving practitioners' access to research, and ensuring the adoption of best practices that have emerged from research. I curated evidence-based research insights into user-friendly resource guides and helped organise quarterly teacher professional development forums and bi-annual education symposiums as a platform for those undertaking research to engage with the education sector. In spite of the determined and earnest efforts by researchers to share their knowledge with practitioners and policy makers, it was not uncommon to hear from practitioners and policy makers of their struggle to find relevant research evidence or of their frustration to make connections from said evidence to their classrooms. The exceptions were often individuals that had collaborated or were engaged with the research projects. These teachers, school leaders and even ministry officials, by and large, found their experiences engaging in research enriching, had a deeper understanding of the research tools and research data and were thus able to draw better connections from the research findings to their own practice.

I had come to realise that KMb efforts in education often stop at 'push' practices of knowledge dissemination and research translation for local implementation in schools and I was part of that problem. I found a gap between the best practices purported about KMb around user engagement, and the actual practices of education researchers, particularly those who are involved in or doing research adjacent to KMb research. The realization of this gap prompted me to start investigating issues around user engagement in research. The SSHRC review on

the state of KMb in learning by Levin (2008) drove me to study whether the needle has moved in the years since that review. I contend that it is timely to re-examine the roles and engagement of knowledge users in current KMb research. In my study, I examine this issue with a similar focus on K-12 teaching and education policy within Canada. It is hoped that the findings from this study can identify knowledge gaps and provide direction for future KMb and education research.

Introducing the Study

A key assessment from the SSHRC report was that KMb was “a field of study and work that is still in a very early stage” (Levin, 2008, p. 6). In the years since, with growing expectations to maximise the impact of research and to trace the long-term sustainability of research results (Cooper et al., 2018), this area of research has correspondingly grown. A search on the ERIC Institute of Education Science database shows there were 226 peer-reviewed published articles in 2008 classified under KMb (search terms included knowledge mobilisation, knowledge translation, knowledge dissemination, knowledge sharing and knowledge exchange). The same search parameters revealed that there were 998 such articles in 2020 – a threefold increase. Research funding agencies and higher education institutes have made the inclusion of a KMb strategy mandatory, or at least highly recommended, in grant applications (Canadian Institutes of Health Research, 2015; Cooper et al., 2018; SSHRC, 2019).

I contend that KMb research should expectedly give more weight to this ‘new’ deliberate and direct engagement model in how researchers are supposed to think about research and its impact, as opposed to a linear, top-down, researcher to user, evidence push process. Such a linear, unidirectional model of knowledge transfer reinforces traditional academic and non-academic silos and inhibits the sharing, transfer, and dissemination of knowledge (Phipps et al., 2016). Instead, a recursive engagement model should involve purposefully and consistently consulting knowledge users repeatedly over time and across different stages in the research process. It is a cause for concern if KMb processes within KMb research are inconsistent with strong reiterative research producer-user connections best practices touted in KMb research (Bielak et al., 2008; Qi & Levin, 2011; Shaxson et al., 2020). And so, it stands to reasons that with the growth of this academic area of work in the 13 years since the SSHRC review was written, we should see a shift from this one-way linear process of KMb to a more recursive engagement model. Levin (2008) cautions that this will require “thoughtful effort on a sustained basis” (p. 9).

Overview of Chapters

Chapter 1, the present chapter, serves to introduce KMb and the context in which I became interested in exploring the engagement of knowledge users in KMb and education research. Chapter 2 presents a literature review on KMb, examining the emergence of key theoretical concepts underpinning the research-policy-practice relationship of KMb. I then explore the development of KMb within the education field, with particular attention to the Canadian education context. I finally discuss the

gap in this research-policy-practice relationship and reasons why engaging with knowledge users is crucial to successful KMb and educational research. This chapter serves to situate the importance of this study as a diagnostic starting point in understanding current research producer-user relationships in order to build stronger reiterative connections in the future.

Chapter 3 describes the scoping review methodology used in this study, including the development of protocols, the search strategy, and the data extraction processes. Chapter 4 presents the sole manuscript, “Engaging Knowledge Users in Knowledge Mobilisation Research: A Scoping Review,” of this manuscript-based master’s thesis. This manuscript includes the scoping review on the roles and engagement of knowledge users in current KMb research, with a focus on K-12 teaching and education policy research within Canada and presents the findings and discussion of this review. As the manuscript is written as a stand-alone document for submission to the journal *Evidence & Policy*, there is inevitably minor duplication of content from the other chapters. The manuscript remains part of the thesis and all the chapters fit together as a complete and unified whole.

Chapter 5 provides conclusions and salient points emerging from my analysis. KMb is a highly interdisciplinary area of research with a diverse group of knowledge users involved. While knowledge users were found to be engaged, often repeatedly, during the research process, there are still gaps that need to be addressed to improve user engagement. I also discuss my own experience engaging with knowledge users and future directions for the field of KMb.

Chapter 2: Literature Review

As noted in Chapter 1, the definition of KMb provided by the SSHRC (2020) is "(t)he reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users … in such a way that may benefit users and create positive impacts … and, ultimately, has the potential to enhance the profile, reach and impact of social sciences and humanities research". The KMb process is applicable to many fields and subjects. The breadth of KMb is mirrored by the vast and often inconsistent range of terms being used to describe the different elements of the process: knowledge translation, knowledge dissemination, knowledge sharing, knowledge exchange, knowledge transfer (Myers, 2011). These different terms reflect slightly different variations, depending on, and not limited to, discipline, phase of exchange and methodologies (Matheson & Edwards, 2016; Read et al., 2013).

Attention to this "flow and uptake" relationship between research, policy and practice is not new (Cooper & Levin, 2010; Hollands & Escueta, 2020; Qi & Levin, 2011; Read et al., 2013; Snow, 2015). This literature review will first look at knowledge production, knowledge use and the emergence of this new phase of the research-policy-practice relationships termed KMb. I then examine the development of KMb within the field of education, focusing on Canada, its education system and the challenges and affordances of KMb within this geographical context. Finally, I unpack and discuss the reasons behind the gap in this research-policy-practice relationship and how this study aims to address this gap.

Knowledge Production and Use

The use of knowledge to inform policy and practice is well-established and is buttressed on the premise that the insights yielded from research evidence can be distilled and applied to find solutions and solve problems (Cooper & Levin, 2010; Tseng, 2012). The concept of knowledge is itself contested and is one that requires its own attention in a separate paper. Traditional understandings, tacit experiences, explicit codified information, empirical evidence are considered some of the many types of knowledge (Cooper & Levin, 2013). For the purposes of this research, I focus particularly on empirical research knowledge that has been validated through formal peer review mechanisms and published in academic journals.

Understanding how knowledge is used also requires attention, itself a process of considerable depth and complexity. Knowledge use, in practice, is rarely a linear problem-to-research-to-findings-to-application process. Various stakeholders define, acquire, interpret, and ultimately use knowledge very differently from each other. We can look at the work by Carol Weiss on the seven models of research use (1979) as laying some of this groundwork. Nutley et al. (2007) are also often cited in conceptualising some of the different ways of using research. There is instrumental use – research evidence that directly influences particular decisions (Landry et al., 2001; Nutley et al., 2007); conceptual use – new ideas, theories and/or hypothesis that influences new understanding about issues, problems, or solutions (Weiss, 1979); symbolic or political use – strategic use of knowledge to persuade or legitimise views, decisions or legislations; imposed use – mandated application of

evidence, often tied to funding requirements (Weiss et al., 2005); and process use – application of knowledge learnt during the production of research, rather than from research findings (Tseng, 2012). Understanding how knowledge is used has important implications on knowledge application, utilisation, and uptake, which are all part of KMb.

Much of the early work and development in knowledge utilisation comes from the health sciences discipline, particularly on innovation diffusion (Rogers, 2003) and evidence-based medicine (Evidence-Based Medicine Working Group, 1992, as cited in Estabrooks et al., 2008). The latter heralded the “explicit incorporation of empirical research findings into clinical decision-making processes” (Estabrooks et al., 2008, p. 3), with the emerging concerns about rising health care costs and increasing demands for accountability propelled evidence-based research as an accountable form of knowledge production. The emergence of evidence-based research, and its growing popularity in other fields of research (Qi & Levin, 2013), has created a shift in how knowledge production is conceptualised (Estabrooks et al., 2008) and how we approach KMb.

KMb in Education and its Relevance in Educational Practice

Increasingly over the last two decades, there has been a similar shift towards formal evidence-based knowledge in education as a ‘new’ way of approaching teaching and learning (Cooper et al., 2009; Hollands & Escueta, 2020; Levin, 2011; Neal et al., 2019; Snow, 2015). There has been an increasing scrutiny of the extent

to which research brings about societal impact, coupled with demands for a higher standard of education and calls on governments to be held accountable for public funding (Cooper et al., 2009; Levin, 2011). Advancements of information and communication technologies have meant the availability and ease of access to data. These changes have fuelled an increasing emphasis of the use of evidence in public systems (Cooper et al., 2009; Hollands & Escueta, 2020; Landry 2001). The demands from funders and governments for publicly funded educational research to be of higher quality and to demonstrate 'real impact' on education policy and classroom practice has consequently increased (Gorard et al., 2020; Hollands & Escueta, 2020).

Formal evidence-based knowledge in education is a relatively 'new' way of approaching teaching and learning, separate from practitioner or 'common-sense' knowledge (Stanovich & Stanovich, 2003; Levin, 2011). It was recommended that policy and practice should be based on the best available evidence, not under the influence of pre-conceived notions or ideologies of what education should be (Neal at al., 2018; Snow, 2015; Stanovich & Stanovich, 2003). The No Child Left Behind Act (2002) in the United States is a prime example of evidence-based decision-making as part of the quest to improve educational standards.

Despite this, Snow (2015) argues that the flaw of such formal evidence-based scientific thinking in education practice is the assumption that classroom problems are clear and unambiguous, research findings are sound and robust, and application is simply a matter of knowledge transfer and translation. Evidence-based knowledge

can provide rigor, verifiability, and replicability but “it requires great contextual sensitivity in interpretation” (Stanovich & Stanovich, 2003, p. 5). This calls for a new model of doing educational research, a true research-practice-policy partnership, with researchers, collaborators and stakeholders all involved and engaged in the design and implementation of research, not only to improve the quality of evidence, but also to improve the compatibility of evidence to education policy and classroom practice (Hollands & Escueta, 2020; Qi & Levin, 2011; Snow, 2015). KMb, with its attention to a “reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users” (SSHRC, 2020), could help to encourage this collaborative attitude in education research and practice.

KMb in a Canadian Context

The KMb movement has made great strides and contributions in Canada. The CIHR (Canadian Institutes of Health Research) Act in 2000 first cemented knowledge translation into the national research agenda in Canada (Myers, 2011). Two other federal government granting councils, SSHRC (Social Science and Humanities Research Council) and NSERC (Natural Sciences and Engineering Research Council) have adopted similar KMb frameworks in their approach to research and knowledge production.

SSHRC is the primary federal funding agency for social science and humanities research in Canada (Qi & Levin, 2013; Cooper, 2017). Through most of the 1990s,

SSHRC's primary activities were centred on more traditional, well-established, unidirectional activities around knowledge dissemination and transfer (SSHRC, 2009). In recent years, SSHRC's perspective has expanded and evolved to include partnership building and "non-linear, dialogical, discursive and multi-directional approaches" to KMb (CFICE, 2014; SSHRC, 2009, 2019). All SSHRC research grants and scholarship currently prioritise the inclusion of a KMb plan as part of a grant proposal. Guidelines for effective KMb activities in research include determining prospective research users, articulating potential outcomes and impacts stemming from the research, and proposing ways to reach and engage with users (Cooper et al., 2018, SSHRC, 2019). These established guidelines, as part of federal funding structure, legitimise KMb and speak to Canadian federal priorities to engage in this work.

In spite of federal commitment to KMb, previous research indicates that practitioners' and policymakers' KMb capacities are still lacking (Cooper, 2014; Cooper & Levin, 2010; Levin et al., 2011; Sá & Hamlin, 2015). Findings from a research project exploring research use in secondary schools across 11 school districts in Canada show that research use and KMb capacities at school district levels remain modest (Levin et al., 2011). Although there is an overall positive response towards the importance of research as it relates to practice, KMb activities are often highly dependent on interested individuals and lack institutional support and organisational priority. The study also found that, by and large, empirical evidence played a modest role in informing educators' beliefs. Educators' personal experiences and colleagues or professional networks played stronger roles in shaping their views on educational practice.

Cooper's (2014) cross-case analysis of 44 research brokering organisations and Sá and Hamlin's (2015) paper on Canadian provincial governments found a wide variance in appetite for and capacity in KMb among different organisations and across different provinces. Sá and Hamlin (2015) reported that government agencies are burdened with excessive amounts of information to process in a limited period of time. They also highlighted concerns around the "potential applicability of research findings … within a local context" (Sá & Hamlin, 2015, p. 476). Both studies suggest that the most important determinant to enhance research use was a strong network between researchers and decision-makers.

Part of the challenge for KMb in Canada is that the responsibility of all levels of education has been delegated by the federal government and is governed provincially. Spread across large geographical distances, the building of strong professional networks and maintaining consistent KMb practices across education institutions and school districts becomes daunting. Encouragingly, there are a number of initiatives primed to meet this challenge. For example, Research Impact Canada, developed by York University and the University of Victoria in 2006, has been committed to building capacities in KMb, and supporting collaborative and inclusive engagement with local communities. Research Impact Canada is able to leverage its network of 17 universities across Canada to elevate and accelerate the impact of academic research (Myers, 2011; Research Impact Canada, 2018). The province of Ontario has also shown promising initiative through the Knowledge Network for Applied Education Research (KNAER-RECRAE). Funded by the Ontario

Ministry of Education and led by Western University and the University of Toronto, this tripartite initiative brings together researchers and practitioners at local, provincial, and national levels and is focused on establishing connections and engaging communities of practice to improve educational practices and student outcomes in Ontario (Campbell et al., 2017; KNAER-RECRAE, 2017).

The Research Gap

More often than not, in these conceptualised ‘research to practice’ or ‘research to policy’ processes, there is an implicit linear, unidirectional relationship between knowledge producers and knowledge users. Both Bielak et al. (2008) and Tseng (2012) observe that considerable efforts are often placed on the producer-push model, which focuses primarily on the way knowledge producers ‘push’ evidence to share and make research knowledge more accessible. This is in contrast with the user-pull model, where knowledge users identify relevant research to ‘pull in’ to use or engage in, or the exchange model where producers and users collaboratively deliberate on the kinds of relevant research evidence. While there are merits to this ‘research-push’ model, it risks placing a disproportionate value on the production side of knowledge without an understanding of how knowledge is acquired, interpreted, and used, creating a gap between those who produce and those who use research knowledge. Why is there such a gap? If knowledge producers and users both see a mutually assenting need to find solutions and solve problems, it stands to reason that both parties would support each other and simply work together. Existing literature can provide some insights into unpacking this disconnect.

Caplan (1979) suggests the Two Communities Theory. This conceptual framework portrays social scientists and policy makers as two distinct communities. He cites the lack of relationships between the two communities, coupled with conflicting values, divergent rewards systems and different language use, as factors that keep them apart. Caplan recommends a move from an instrumental utilisation of research in policy-making to a conceptual utilisation of research, which is to approach problem solving using both “internal logic” (unbiased diagnosis of policy issues – research and data from social scientists) and “external logic” (to weigh and reconcile conflicting dictates of the information – bureaucratic constraints and public opinions).

Shonkoff (2000) proposes the Three Culture Theory, that uniquely identifies the scientist, the policy maker, and the practitioner as three separate cultures, as opposed to Caplan’s two communities. Researchers are focused on empirical research, through testing of hypotheses and refining theoretical concepts. Policymakers selectively use empirical research to support a persuasive narrative, balancing competing public interests. And although grounded in empirical research, practitioners are obligated to respond to human needs and to make decisions in spite of incomplete or inadequate information. Shonkoff concludes that the challenge is to go beyond weighing of the relative value of each perspective but finding new ways to collaborate by “blending all three cultures” (p. 187).

Although Bogenschneider & Corbett (2010) draw from the theoretical foundations of community (Caplan, 1979) and culture (Shonkoff, 2000), the authors argue the

"bifurcated view of the world is too simplistic" (p. 98) and fails to consider the dynamic domains and dimensions of culture of the different communities. They propose the Community Dissonance Theory, a conceptual framework that expands the notion of two communities to a number of community groups (e.g. basic research, applied research, intermediaries, policy doers, policy makers) (p. 77) and considers the "perceptions and behaviour disposition" (p. 114) of institutional and professional cultural influences on each of these different community groups.

Understanding Knowledge Users

Knowledge can be theorised as being socially constructed (Cooper et al., 2009; SSHRC, 2009) and "… not necessarily developed in … a linear manner" (Boyer, 1990, p. 15). The challenge of KMb is the complexity and dependency on many partners for 'success' (Cooper et al., 2009), each group acquiring, interpreting, and using knowledge and research evidence differently, and the misalignments created by this tension (Coburn & Penuel, 2016). The landscape of actors and organisations is nuanced as it is driven by different sets of agendas, paradigms and organisational priorities (Cooper et al., 2009; Matheson & Edwards, 2016; Tseng, 2012).

Practitioners and policymakers are two often-generalised pools of knowledge users within the education context. The primary priority of educators and practitioners is to their classrooms, and the responsibilities and duties that come with being a teacher. They generally use research to broadly inform their classroom practices (Mills et al., 2019; O'Mara & Gutierrez, 2010). Notwithstanding the fact that

practitioners have a generally positive response towards research, there is a lack of regular and systematic process in incorporating research into their pedagogy (Cooper & Levin, 2010; Neal et al., 2018). Teachers lack the time to read through heavy theoretical work and tend to lean towards research that is comparable to their existing practice (Mills et al., 2019; Neal et al., 2018). By contrast, policymakers focus on using research to ‘solve’ specific problems or to support ‘policy narratives’ (Mills et al., 2019; Shaxson & Boaz, 2020). Their support of which and how evidence is used is mediated and influenced by three factors: ‘fidelity to science’, ‘democratic representation’, and ‘effective resource management’ (Shaxson & Boaz, 2020, p. 4). Decisions are made through a process of negotiation and compromise to different constituencies and stakeholders. Additionally, there lies a myriad of critical research users that straddle between these two pools of knowledge users, each with their own priorities and preferences.

It is vital for knowledge producers to be cognisant of the varied disciplinary interests and organisational priorities of knowledge users, and the need for significant collaboration between knowledge producers and users is crucial for a ‘goldilocks situation’ for effective knowledge transfer and research impact (Ion et al., 2019). Simply pushing research knowledge to inform policy and classroom practice ignores the contexts and agendas for evidence to flourish in education contexts.

One approach to overcome this gap is the grounding of education research within the education context and viewing teachers and policymakers as partners in developing knowledge that is useful and effective in responding to the needs of

education policy and classroom practice. Having teachers as co-researchers is largely believed to be a positive influence on research projects in schools (Hollands & Escueta, 2020; Kieran et al., 2013). Teachers are immersed in the school culture and are uniquely positioned to influence educational practice and develop a community of learning within the schools (Erwee & Conway, 2006; O'Mara & Gutierrez, 2010; Qi & Levin, 2013). Similarly, Brown (2012) suggests that "researchers with strong, possibly ideologically related, ties to policy makers may have certain perceived organisational or sector-level salience and so more chance of gaining access to and having their research considered by policy makers, than those who do not" (p. 462).

Levin (2008) states that one key element that is considered largely beyond dispute is that "personal contact and interaction remains the most powerful vehicle for moving evidence into practice" (p. 8). This is echoed in other KMb assessment and review literature (Cooper et al., 2018; Levin et al., 2011). A meaningful partnership throughout the research process, with ongoing two-way conversations and consistent engagement at each phase of the research, not only contributes to research validity but improves network engagement and boosts research dissemination (Phipps et al., 2016). My study, therefore, seeks to contribute to this literature by critically assessing if researchers within the education field have considered such engagements and sustained relationships and have addressed this within their research. In particular, this study will explore evidence of education research that includes KMb and KMb-related methodologies as the focus of the research. The intention of my study is to provide findings that may be helpful to

nudge researchers in education or other fields to think deeply about the ways they engage with those that use their knowledge.

Chapter 3: Methods

The aim of this study is to take an exploratory look at the engagement of knowledge users in KMb literature of the past decade, on Canadian K-12 teaching and education policy research. Conducting a scoping review can offer a systematic first step to explore evidence from available literature and identify gaps for further research, particularly in topics or areas with an emergent knowledge-base (Arksey & O'Malley, 2005; Chick et al., 2019; Mallidou et al., 2017; Tricco, Zarin, et al., 2018). I chose the scoping review method because this approach helps to identify knowledge gaps and provides direction for future research, which is well-matched to the research objectives of my study.

This study adopted the scoping review protocol set out by Arksey and O'Malley (2005) and further developed by Levac et al. (2010). The stages are a) defining the research question; b) identifying relevant studies; c) selecting the literature; d) charting the data; e) collating, summarizing and reporting the results; f) consulting knowledge users.

Defining the Research Question

In this paper, I examine the state of knowledge mobilisation in the years since Levin's review (2008), posing the question: How have the research producer-user connections in KMb research on Canadian K-12 teaching and education policy changed? The three research objectives are to a) first identify the profile of knowledge users; b) then to map current KMb research in terms of the engagement

of knowledge users during the research process.; and c) finally, to summarize the changes and trajectory, if any, of the roles of knowledge users in education research from 2008 to the present.

Identifying Relevant Studies

Based on the research objectives above, a search strategy was developed and refined in consultation with a university librarian. A list of keywords was compiled from related and associated terms for KMb from literature (Lawlor et al., 2019; SSHRC, 2019). The following inclusion and exclusion criteria set out the parameters that lead to the identification of relevant academic (peer-reviewed) publications for this scoping review.

- studies to include one of the following keywords related to knowledge mobilisation in their title, keywords, and/or abstract: “knowledge mobilisation”, “knowledge translation”, “knowledge dissemination”, “knowledge sharing”, “knowledge exchange”, “knowledge utilisation”, “evidence based practice”, “use of research”, “using research”, “research user”, “use of knowledge”, “knowledge user”, “research impact”;
- studies are limited to research on K-12 education, including school systems, teachers, school leaders, school boards, policymakers and/or education ministries;
- studies are limited to research on Canada and its provinces;
- studies are limited to publishing dates from January 2008 to July 2020 (in accordance with the year Levin’s review (2008) was published to the date the search was executed);

- studies are limited to articles published in the English language only;
- studies are not limited to specific study designs or specific variables or factors.

I limited my search to peer-reviewed journal articles from four electronic education and interdisciplinary databases: Education Resources Information Center (ERIC) (ProQuest); Education Database; Educational Administration Abstracts (EBSCO); and Scopus. The three education databases provide sufficient “subject coverage” (Gusenbauer & Haddaway, 2020) and capture all relevant journal articles in the education field. To supplement the search and “to reach beyond the limitations of a specialized search system” (Gusenbauer & Haddaway, 2020, p. 29), I had also included the multidisciplinary Scopus database to broaden the coverage to identify any additional relevant citation information. All search results (243 citations) were exported into a bibliographic manager (EndNote X9) and duplicates were removed.

I acknowledge that there may be books, book chapters, KMb-related websites and blogs, and additional grey literature that have contributed important KMb-related research, but their inclusion would have made the scope of the review oversized for a master’s thesis research.

Selecting the Literature

All retrieved relevant results were exported to an Excel spreadsheet, assigned a unique number to track each article and underwent two phases of screening. In

phase one, I worked with my supervisor to independently screen the titles and abstracts of the same 24 articles or 10% of all 243 search results, based on the identified eligibility criteria. This independent double screening was to ensure consistency and assess any risk of researcher biases. The titles and abstracts of all retrieved results were then screened to identify potentially relevant articles. Specifically, each article had to have:

a) conducted its research in Canada or any of its provinces;

b) involved K-12 classrooms, school systems, teachers, school leaders, school boards, policymakers and/or education ministry; and

c) included KMb or its related concepts as the focus of its inquiry.

Any disagreements in our screening were resolved through discussion. In phase two, we proceeded to screen full texts of all potentially relevant articles based on the same identified eligibility criteria and remove any unrelated articles. Again, any disagreements were resolved by discussion. A PRIMSA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Tricco, Lillie, at al., 2018) flow diagram (Fig. 1) was developed to demonstrate the flow of literature throughout this scoping review.

Charting the Data

From the included 28 articles, I collected and recorded information about: a) publication demographics (year, title, journal discipline); b) published profile of education knowledge users (types of knowledge user, sample size, province(s), subject discipline); and c) participatory and engagement characteristics of knowledge users in the creation, design and/or production of research. Due to the limitation of

resources, the information extracted at this stage was done by a single reviewer. The lack of a double screening of this stage is acknowledged as a limitation of the research.

Collating, Summarizing and Reporting the Results

My results are reported and discussed in the next chapter. I look at the characteristics of 28 studies, the subject area of studies and examine and analyse the data with respect to the three research objectives of this study, a) to identify the profile of education knowledge users, b) to map current KMb research in terms of the engagement of knowledge users during the research process, and c) to summarise the changes and trajectory, if any, of the roles of knowledge users during education research from 2008 to the present.

Consulting Knowledge Users

To model the intention of this study to encourage engagement with knowledge users in research, I consulted my own knowledge users, including individuals with a background in K-12 education teaching and/or policymaking, education researchers, as well as KMb practitioners, throughout the research process to provide various perspectives, feedback, and their insights on the applicability of the review findings. This approach has been proposed as a way to enhance the relevance and usefulness of the findings from these reviews (Levac et al., 2010; Pollock et al., 2018). Ethics approval or consent to participate was not required because this manuscript does not contain any individual person’s data, human subjects, or human material (Mallidou et al., 2017). This is a scoping review based solely on already

published data and publicly available reports. Knowledge users were not consulted as participants, and their insights served as a validation process and were not used as primary data.

With the foundation of the literature review and methodology for my study laid out, the next chapter dives into the manuscript, “Engaging Knowledge Users in Knowledge Mobilisation Research: A Scoping Review”. As a stand-alone document, the manuscript includes duplicated content from the first three chapters in order to provide context for the reader of the publication. The manuscript also reports on the review findings, maps the frequency of engagement of knowledge users, and discusses current gaps and areas for future research.

Chapter 4: Engaging Knowledge Users in Knowledge Mobilisation Research: A Scoping Review

Abstract

This study examines the roles and engagement of knowledge users in knowledge mobilisation (KMb) research on Canadian K-12 teaching and education policy. Research on and around KMb has grown in the past decade. Thus, it is timely to re-evaluate if current knowledge producer-user relationships in KMb research feature the mediating variables or recursive elements promulgated as best practices in KMb research.

A scoping review was conducted to identify the profile of knowledge users, map current KMb research in terms of engagement of knowledge users and account for any changes to their roles in the research process. Twenty-eight relevant studies were identified and contextual data and frequency of engagement of knowledge users were collected and analysed.

Findings indicate that a diverse group of knowledge users are engaged in KMb research. Knowledge users were most frequently engaged during the search and data collection phase of the research process. Having a trusting and honest relationship between knowledge producers and users was the most common enabler for positive user engagement. Conversely, the lack of time and resources was found to be a common barrier to quality engagement with knowledge users. The review

suggests that both the intent and frequency of engagement of knowledge users are critical factors to consider in KMb research in education.

Resume

Cette étude examine les rôles et l'engagement des utilisateurs des connaissances dans la recherche sur la mobilisation des connaissances (MdC) sur la politique canadienne en matière d'enseignement et d'éducation de la maternelle à la 12e année. La recherche sur et autour du MdC s'est développée au cours de la dernière décennie. Ainsi, il est temps de réévaluer si les relations actuelles entre le producteur et l'utilisateur de connaissances dans la recherche MdC comportent les variables médiatrices ou les éléments récursifs promulgués comme les meilleures pratiques dans la recherche MdC.

Une étude de la portée a été mené pour identifier le profil des utilisateurs des connaissances, tracer la recherche actuelle en matière de MdC en termes d'engagement des utilisateurs des connaissances et compter pour de tout changement apporté à leurs rôles dans le processus de recherche. Vingt-huit études pertinentes ont été identifiées et les données contextuelles et la fréquence d'engagement des utilisateurs des connaissances ont été collectées et analysées.

Les résultats indiquent qu'un groupe diversifié d'utilisateurs des connaissances est engagé dans la recherche sur la MdC. Les utilisateurs des connaissances étaient impliqués le plus souvent pendant la phase de recherche et de collecte de données du processus de recherche. Avoir une relation de confiance et honnête entre les producteurs de connaissances et les utilisateurs était le catalyseur le plus courant pour un engagement positif des utilisateurs. Inversement, le manque de temps et de

ressources s'est avéré être un obstacle courant à un engagement de qualité avec les utilisateurs des connaissances. Cette revue semble indiquer que l'intention et la fréquence d'engagement des utilisateurs des connaissances sont des facteurs critiques à considérer dans la recherche sur le MdC en éducation.

Introduction

In 2008, the Canadian Council on Learning and the Social Sciences and Humanities Research Council (SSHRC) requested an overview of the state of the field of knowledge mobilisation (KMb) with a focus on education and learning (Levin, 2008). KMb is defined as "(t)he reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users … in such a way that may benefit users and create positive impacts … and, ultimately, has the potential to enhance the profile, reach and impact of social sciences and humanities research" (SSHRC, 2020). The review laid out key strengths and weaknesses of KMb conceptions and practices. It highlighted growing KMb learning communities and efforts to improve research and practice connections, both locally and globally. Key elements of successful KMb highlighted in the report included an understanding that "the relationship between knowledge and use runs in both directions" and that personal contact and connections between producers and users "remains the most powerful vehicle for moving evidence into practice" (Levin, 2008, p. 8).

Notably, however, the review also found that many KMb process frameworks were linear process-product models that "seem to give dominance to the work of researchers" (Levin, 2008, p. 13), with some lacking or leaving little regard for mediating variables or recursive elements (Levin, 2008). This misalignment between KMb standards and actual KMb work is echoed in other empirical evidence (Bielak et al.; 2008; Smith, 2010; Qi & Levin, 2011; Shaxson et al., 2020).

Evidence suggests that a deliberate and direct engagement between education researchers, education policy makers and classroom practitioners could be highly advantageous to uncovering different forms of evidence and knowledge, resulting in an improved quality of impactful research (Hollands & Escueta, 2020; Qi & Levin, 2011; Snow, 2015). If we understand knowledge as being socially constructed (Cooper et al., 2009; Levin, 2008), the movement of any knowledge to enact impactful change would require a synergistic relationship between both the knowledge producer and the knowledge user. This is especially true in formal education contexts, with multiple proverbial ‘cooks in the kitchen’, i.e. students, teachers, parents, principals, school boards, policymakers and researchers, making KMb in education particularly tenuous. Successful mobilisation of education research knowledge can lead to powerful changes in education policy and classroom practice (Nutley et al., 2007, Levin, 2008).

In the years since the 2008 SSHRC review, with increased expectations to maximise the impact of research and to trace the long-term sustainability of research results (Cooper et al., 2018), KMb research has correspondingly grown. Research funding agencies and higher education institutes have made the inclusion of a KMb strategy mandatory, or at least highly recommended, in grant applications (Canadian Institutes of Health Research, 2015; Cooper et al., 2018; SSHRC, 2019). It is therefore timely to re-examine the roles and engagement of knowledge users in current KMb research, focusing on K-12 teaching and education policy within Canada. This focus takes as a model the 2008 SSHRC review on KMb in education and learning. It is a cause for concern if KMb processes within KMb research are inconsistent with strong reiterative research producer-user connections, which are

best practices touted in KMb research (Bielak et al., 2008; Qi & Levin, 2011; Shaxson et al., 2020).

Literature Review

This “flow and uptake” relationship between research, policy and practice is not new (Cooper & Levin, 2010; Hollands & Escueta, 2020; Qi & Levin, 2011; Read et al., 2013; Snow, 2015). The use of knowledge to inform policy and practice is well-established and is buttressed on the premise that the insights yielded from research evidence can be distilled and applied to find solutions and solve problems (Cooper & Levin, 2010; Tseng, 2012). Much of the early work and development in knowledge utilisation stem from the health sciences disciplines, particularly on innovation diffusion (Rogers, 2003) and evidence-based medicine (Evidence-Based Medicine Working Group, 1992, as cited in Estabrooks et al., 2008). The latter heralded the “explicit incorporation of empirical research findings into clinical decision-making processes” (Estabrooks et al., 2008, p. 3) in response to the emerging concerns about rising health care costs and increasing demands for accountability of publicly-funded research. The emergence of evidence-based research, and its growing popularity in other fields of research (Qi & Levin, 2013), has created a shift in how knowledge production is conceptualised (Estabrooks et al., 2008) and how we approach KMb.

Increasingly over the last two decades, there has been a similar shift towards formal evidence-based knowledge in education as a ‘new’ way of approaching

teaching and learning (Cooper et al., 2009; Hollands & Escueta, 2020; Levin, 2011; Neal et al., 2019; Snow, 2015). Growing scrutiny of the extent to which research brings about societal impact, coupled with calls on governments to be held accountable for public funding, has fuelled an increasing emphasis on the use of evidence in public systems to demonstrate 'real impact' on education policy and classroom practice (Cooper et al., 2009; Gorard et al., 2020; Hollands & Escueta, 2020; Landry, 2001). But despite the rigor, verifiability, and replicability that evidence-based knowledge is touted to provide, "it requires great contextual sensitivity in interpretation" (Stanovich & Stanovich, 2003, p. 5). It requires a true research-practice-policy partnership with researchers, collaborators and stakeholders all involved and engaged in the design and implementation of research, to not only improve the quality of evidence, but also the compatibility of evidence to education policy and classroom practice (Hollands & Escueta, 2020; Qi & Levin, 2011; Snow, 2015). KMb, with its attention to a "reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users" (SSHRC, 2020), is precisely the mechanism to encourage this collaborative attitude in education research and practice.

Within Canada, KMb is similarly growing in prominence. All three Canadian federal research funding agencies, the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and SSHRC, include KMb frameworks in their approach to research and knowledge production. The current requisite of a KMb plan as part of a grant proposal for all SSHRC research grants and scholarship is a case in point. Established guidelines,

as part of federal funding structure, legitimises KMb and speaks to Canadian federal priorities to engage in this work.

In spite of this rise in prominence, previous research indicates that practitioners' and policymakers' KMb capacities are still lacking (Cooper, 2014; Cooper & Levin, 2010; Levin et al., 2011; Sá & Hamlin, 2015). Levin et al. (2011) found that research use and KMb capacities remain modest among secondary schools across 11 school districts in Canada. Cooper's (2014) cross-case analysis of 44 research brokering organisations and Sá and Hamlin's (2015) paper on Canadian provincial governments found a wide variable appetite for and capacity in KMb among different organisations and across different provinces. Notably, both of these studies suggest that the most important determinant to enhancing research use was strong networking between researchers and decision makers.

Part of the challenge for KMb in Canada is that the responsibility of all levels of education is provincially regulated. Spread across large geographical distances, the building of strong professional networks and maintaining consistent KMb practices across education institutions and school districts becomes daunting. Encouragingly, there are a number of initiatives primed to meet this challenge. For example, Research Impact Canada has committed to building capacities in KMb, supporting collaborative and inclusive engagement with local communities. Research Impact Canada is able to leverage on its network of 17 universities across Canada to elevate and accelerate the impact of academic research (Myers, 2011; Research Impact Canada, 2018). The province of Ontario has also shown promising initiative

through the Knowledge Network for Applied Education Research (KNAER-RECRAE) by bringing together researchers and practitioners at local, provincial, and national levels and is focused on establishing connections and engaging communities of practice to improve educational practices and student outcomes in Ontario (Campbell et al., 2017; KNAER-RECRAE, 2017).

In order to develop knowledge that is useful and effective in responding to the needs of education policy and classroom practice, we should also consider grounding education research within the education context and viewing teachers and policymakers as partners. This, unfortunately, is easier said than done. There is a complexity and dependency on many partners for ‘success’ (Cooper et al., 2009), each group acquiring, interpreting, and using knowledge and research evidence differently, and this misalignment creates tension (Coburn & Penuel, 2016). Practitioners and policymakers are two, often generalised, pools of knowledge users within the education context. The primary priority of educators and practitioners is their classroom and the responsibilities and duties that comes with being a teacher, so they would generally use research to inform their classroom practice (Mills et al., 2019; O’Mara & Gutierrez, 2010). In contrast, policymakers focus on using research to ‘solve’ specific problems or to support ‘policy narratives’ (Mills et al., 2019; Shaxson & Boaz, 2020). Decisions are made through a process of negotiations and compromises to different constituencies and stakeholders. Additionally, there are a myriad of critical research users that straddle between these two pools of knowledge users, further adding to the complexity of impactful KMb.

It is vital for knowledge producers to be cognisant of the varied disciplinary interests and organisational priorities of knowledge users, and the need for significant collaboration between knowledge producers and users is crucial for a ‘goldilocks situation’ for effective knowledge transfer and research impact (Ion et al., 2019). Simply pushing research knowledge to inform policy and classroom practice ignores the contexts and agendas for evidence to flourish in education contexts.

Levin (2008) states that one key element that is considered largely beyond dispute is that “personal contact and interaction remains the most powerful vehicle for moving evidence into practice” (p. 8). This is echoed in other KMb assessment and review literature (Cooper et al., 2018; Levin et al., 2011). Hence, it is critical to assess if researchers within the education field employing KMb and KMb-related methodologies, have considered and addressed such sustained relationships within their research.

Method

This study takes an exploratory look at knowledge users in KMb research in Canadian K-12 teaching and education policy. This review adopts the scoping review protocol set out by Arksey and O’Malley (2005) and recommendations by Levac et al. (2010) to incorporate consultation with stakeholders. A scoping review can offer a systematic first step to explore evidence from available literature, particularly in topics or areas with emergent knowledge-base (Arksey & O’Malley, 2005; Chick et al., 2019; Mallidou et al., 2017; Tricco, Zarin, et al., 2018). The scoping review

method can also help to identify knowledge gaps and provide direction for future research, which is well-matched to the research objectives of this study.

Defining the Research Question

In this paper, I examine the state of knowledge mobilisation in the years since Levin's review (2008), asking: How have the research producer-user connections in KMb research on Canadian K-12 teaching and education policy changed? This overarching research question guides the scoping review that will examine the roles and engagement of knowledge users in current KMb research, with a focus on K-12 teaching and education policy research within Canada.

The research objectives are to:

a) Identify the profile of knowledge users;
b) Map current KMb research in terms of the engagement of knowledge users during the research process; and
c) Summarize the changes and trajectory, if any, of the roles of knowledge users in education processes since 2008.

Identifying Relevant Studies

Based on the research objectives above, a search strategy was developed and later refined in consultation with a university librarian. Search terms included a list of keywords compiled from related and associated terms of KMb from literature (Lawlor et al., 2019; SSHRC, 2019). These included "knowledge mobilisation", "knowledge translation", "knowledge dissemination", "knowledge sharing", "knowledge

exchange", "knowledge utilisation", "evidence based practice", "use of research", "using research", "research user", "use of knowledge", "knowledge user", and "research impact". The search strategy involved using the search terms for a title, keywords and abstract search from four education and interdisciplinary databases for academic (peer-reviewed) literature published between January 2008 to July 2020 (spanning from the year Levin's 2008 review was published to the date the search was executed). Search limits were applied in language (English only), geography (Canada and its provinces) and discipline (K-12 education). Results from each database search were exported to a single library in the bibliographic manager Endnote X9 software, and duplicates were identified and removed.

Selecting the Literature

All retrieved relevant results were exported to an Excel spreadsheet, assigned a unique number to track each article, and subjected to two phases of screening. In the first phase, the title and abstract of all 243 search results were screened to ensure that each article a) conducted its research in Canada or any of its provinces; b) involved K-12 classrooms, school systems, teachers, school leaders, school boards, policymakers and/or education ministries; and c) had KMb or its related concepts as the focus of its inquiry. In the second phase, the full texts of all potentially relevant articles were screened using the same identified eligibility criteria and all unrelated articles were removed.

Charting the Data

The participatory and engagement characteristics of the knowledge user(s) (type of engagement activity, frequency of engagement) described in each article were collected and recorded. Contextual data (type of knowledge user, sample size, research subject area, journal discipline) was also similarly collected and recorded. Data abstraction was conducted using a standardized Excel table.

Since this paper does not intend to evaluate the strength of the studies nor their methodologies, it does not require the use of quality appraisal tools or meta-analysis techniques to determine the effectiveness of specific interventions used in systematic reviews (Chick et al., 2019). This paper instead serves as a reflection of the current engagement of knowledge users in KMb research conducted in the education field.

Collating, Summarizing and Reporting the Results

Results were analysed using frequency and deductive content analysis. Points of engagement were defined and coded based on an engagement framework by Tricco, Zarin, et al. (2018). Each point of engagement recorded was an instance or opportunity of engagement that was indicated by each article. The framework was based on the stakeholder engagement opportunity framework established by Keown et al. (2008), which includes the following steps:

1. Conceptualise and design (occurs before or at the beginning stage of the research process e.g., conceptualisation of research topic; proposal or study protocol development; define research criteria);

2. Search and data collection (occurs during the research process e.g., recruitment of knowledge user(s); provide supplemental, experiential data to literature sources; perform data extraction);
3. Data synthesis and interpretation (occurs during or towards the end stage of the research process e.g., assist with analysis; review and interpret data synthesis);
4. Knowledge dissemination and application (occurs upon the completion of the research e.g., dissemination, review and provide feedback on report; develop classroom practice or policy recommendations).

Consulting Knowledge Users

In order to mirror the intention of this study of encouraging engagement with knowledge users in research, I personally reached out to potential knowledge users of my review: individuals with a background in K-12 education teaching and/or policymaking; education researchers; and KMb practitioners. My purpose was to obtain advice, feedback and opinions on the development of the research objectives; to refine the search protocol; and to integrate their insights on the applicability of the review findings. For instance, I consulted potential knowledge users when developing my search strategy and was recommended to include the keyword “research impact”. Engaging with knowledge users through the review process allowed for better tailoring of the review and led to potentially more relevant and useful findings (Levac et al., 2010; Pollock et al., 2018). Ethics approval or consent to participate was not required because this manuscript does not contain any individual person’s data, human subjects, or human material (Mallidou et al., 2017).

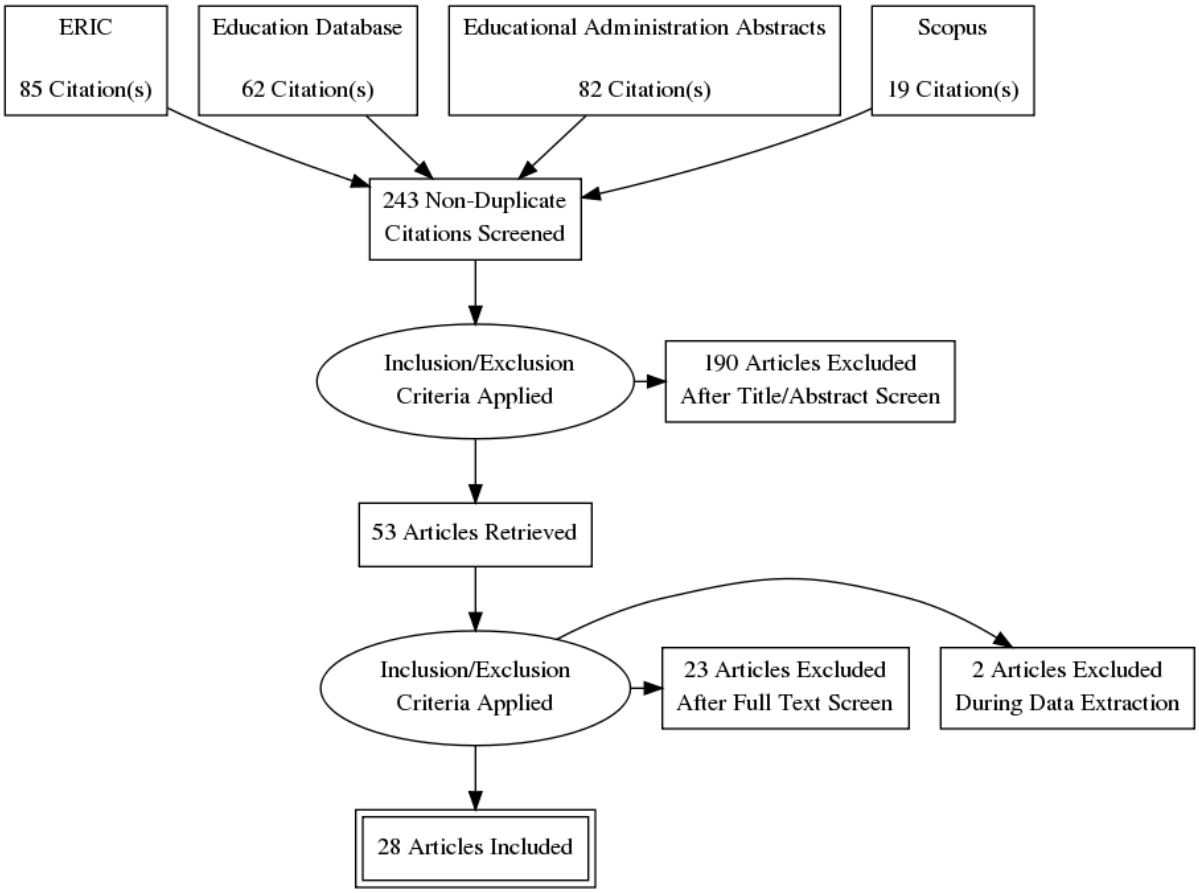
This is a scoping review based solely on already published data and publicly available reports. Knowledge users were not consulted as participants, and their insights served as a validation process that were not used as primary data.

Results

The search from the four databases yielded 243 potentially relevant citations. Fifty-three articles were retrieved for full-test review. Twenty-eight articles fulfilled the eligibility criteria and were included in the final review. This flow is depicted in Figure 1. Full citations of the 28 studies can be found in Appendix 1. The process of this scoping review, including the identification, screening, eligibility and inclusion of studies, was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-Scr) (Tricco, Lillie, at al., 2018).

Figure 1

PRISMA flow diagram



Characteristics of Studies

Table 1 presents the general characteristics of the 28 studies by year of publication, province, and journal discipline. All included studies were published between January 2008 to July 2020. There was an increase in publication over the years, from four studies from 2008 to 2010 to nine studies from 2017 to mid-2020. The growing count could be a sign of increasing interest in KMb or KMb-related research. Half of the studies were conducted in Ontario (n=14, 50%), six studies were conducted in Quebec (21%) and all other studies spread over the other Canadian provinces. Education was clearly the dominant journal publishing discipline (46%).

Table 1

Characteristics of included studies of the 28 included studies.

Characteristics of studies

Characteristics (n=28)		Count	(%)
Year of publication	2008-2010	4	(14)
	2011-2013	5	(18)
	2014-2016	10	(36)
	2017- July 2020	9	(32)
Province	Alberta	2	(7)
	British Columbia	2	(7)
	Manitoba	1	(4)
	Nova Scotia	2	(7)
	Ontario	14	(50)
	Quebec	6	(21)
	Saskatchewan	1	(4)
	Non-specific	5	(18)
Journal discipline	Education (including Higher education, Teaching methods and curriculum, and School organisation and administration.)	21	(75)
	Psychology	5	(18)
	Linguistics	1	(4)
	Medical Sciences	1	(4)

Subject Area of the Publications

Less than a third of the studies (n=8) had KMb and KMb-related concepts (i.e. knowledge translation; research-practice gap) as their singular research focus. More often, in addition to researching KMb or KMb-related concepts, the studies had an additional focus on their research objectives. In terms of these additional areas of focus, nine studies (33%) looked at health education or health-related subjects

including mental-health interventions and healthcare training programs for teachers; six studies looked at curriculum and pedagogy, and policy implementation; six studies looked at teacher education and professional learning communities; and three studies looked at information and communication technologies.

Research Objective 1: Identify the Profile of Education Knowledge Users.

The 28 studies included in the review had a diverse group of knowledge users. The most common knowledge users in these studies were teachers (86%), followed by principals (29%), healthcare practitioners and organisations (21%), and school administrators (18%). Over two-thirds of the studies (n=21) indicated the involvement of more than one user group, with eight of those studies involving three or more user groups.

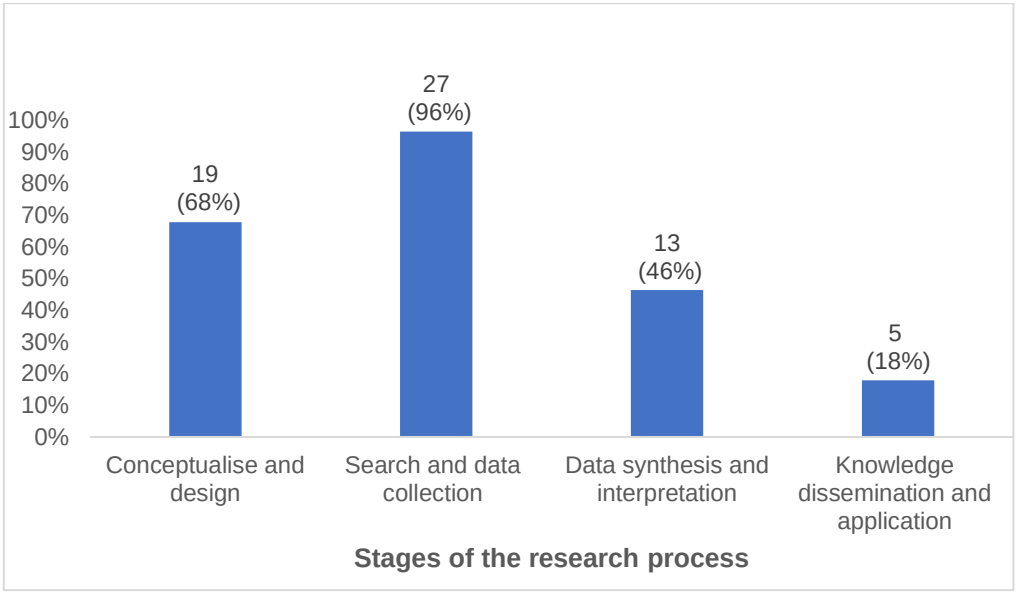
Research Objective 2: Map Current KMb Research from 2008 to Present in Terms of the Engagement of Knowledge Users during the Research Process.

Twenty-seven studies reported knowledge user engagement in at least one stage of the research process (Fig. 2). The one remaining study did not indicate any engagement by knowledge users at any stage of the research. This study consisted of an environmental scan of the implementation of equity policies across school boards in Ontario, identified through knowledge mobilisation processes employed (Shewchuk & Cooper, 2018). Conspicuously, although in their suggestions for improvement the authors note that “co-production of knowledge is critical to improvement planning” (p. 938), the study itself did not specify any contact or collaboration with key education stakeholders.

The data shows that knowledge users were most frequently engaged at the search and data collection phase of the research process. Two-thirds of the studies engaged knowledge users at the conceptualise and design phase of the research. Half of the studies engaged knowledge users at the data synthesis and interpretation phase of the research. Only one-fifth of the studies reported engaging knowledge users at the knowledge dissemination and application phase of the research. This could be due to researchers adhering to a more linear model of doing research, with dissemination engagement occurring after publication and thus underreported.

Figure 2

Engagement of knowledge users during the research process (% out of 28 studies).



At the conceptualise and design phase, occurring before or at the beginning of the research process, a key focus of engagement with knowledge users was to

brainstorm, develop and/or pilot a program or an innovation with knowledge producers. Examples included developing a tool to identify key health-related issues within the school (Planinac et al., 2008); collaborating with knowledge users to chart direction of research (Ng et al., 2015); exchanging knowledge about the content and feasibility of the program (McVey et al., 2009); and creating training videos for teachers featuring expert teachers with experience leading the programs (Beauregard et al., 2015). A second common point of engagement was through information and training sessions about the research agenda prior to the research. This included information sessions to engage knowledge users on the subject (Verlaan & Turmel, 2010), by providing professional development sessions (Ng et al., 2015). Early engagement allows for alignment of expectations and development of practice and policy-relevant research.

During the search and data collection phase, occurring during the research process, the most common point of engagement was in soliciting knowledge users in data collection. This was done through various methods, such as interviews, surveys, focus groups and talking circles. If this were the only point of engagement, it could be indicative of the traditional researcher-researched relationship (Varga-Dobai, 2012), where the central role of a participant is simply to ‘participate’ and provide input to the data collection. However, there were also other key points of engagement, including engaging knowledge users to tap into their social networks to recruit participants (snowballing sampling) (LaPointe-McEwan, 2017). Knowledge users were also able to help put together community partnerships (McQuirter et al., 2015; Reid, 2015) and designate stakeholder groups to promote the use of research findings (Briand-Lamarche et al., 2016) or help make the findings more accessible

(Mady, 2012). These other points of engagement suggest that knowledge producers in these studies see knowledge users as active partners in knowledge production.

At the data synthesis and interpretation phase, occurring during or towards the end of the research process, key points of engagement with knowledge users were to: discuss responses (Cantalini-Williams et al., 2015; Kholgh et al., 2018; Wilson et al., 2010); validate observations (Beauregard et al., 2015); interpret findings (Cooper et al., 2017); and “refine [researchers’] understanding of the [knowledge users’] context of action” (Brown et al., 2018, p. 794).

The most common point of engagement at the knowledge dissemination and application phase, occurring upon the completion of the research, was the sharing of data reports (Lysenko et al., 2014) and the presentation of findings by the researchers to the knowledge users. If knowledge producers were simply making research available without consideration of targeted results or extraction of key implications for the different knowledge groups, it would only reinforce the common ‘push’ practice of knowledge dissemination. Encouragingly, almost all of the studies that indicated dissemination efforts by the researchers, also indicated a collaborative effort by the research with knowledge users to discuss and interpret findings (Boudreau et al., 2019; Cooper et al., 2017; Kholghi et al., 2018) and to comment on the accuracy of reports (Brown et al., 2018; Planinac et al., 2008). Knowledge producers also solicited questions and comments from knowledge users with regard to the findings (Wilson et al., 2009), demonstrating an effort to move beyond the two-dimensional one-way producer-to-user communication connection. Knowledge users

involved in the research have a vested interest in the research findings (Ferris & Sass-Kortsak, 2011). The benefit of this knowledge sharing practice, particularly at the knowledge dissemination and application phase, provides a common understanding of results, promotes clarification and understanding, and allows for personal and organisational learning.

Frequency and recurrence of engagement was also measured. In terms of frequency of engagement during the research process, four studies (14%) indicated that knowledge users were engaged at only one stage in the research process. Close to half of the studies (13 studies, 47%) were found to engage knowledge users in at least two stages of their research process. Six studies (21%) indicated that knowledge users were engaged at three stages of the research process. Four studies (14%) indicated that knowledge users were engaged at all four stages in the research process.

Figure 3

Frequency of engagement of knowledge users throughout the different stages of the research process.

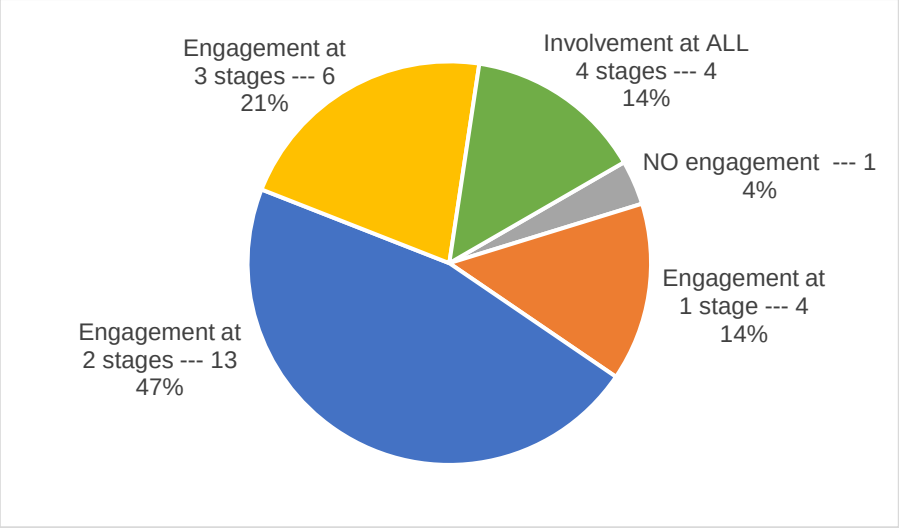
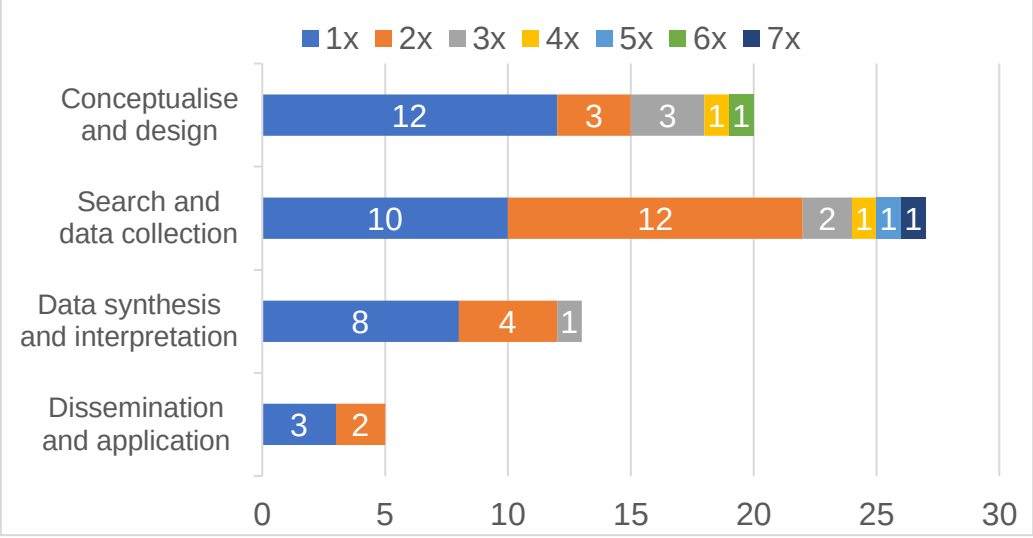


Figure 4

Recurrence of engagement of knowledge users at specific stages of the research process.



The frequency with which researchers engaged with knowledge users varied at the different stages of the research process, and was also documented in this review (Fig. 4). A majority of knowledge users were engaged only once at each of the four

stages in the research process. It is notable that the search and data collection phase bucked this trend with a majority of studies engaging knowledge users at least twice during this phase. The highest number of engagements (7 times) was reached at this phase from the study by Kholghi et al. (2018). The following excerpt showcases the varied and iterative effort made by researchers in the study to engage with different stakeholders:

> *Data collection began with one of three talking circles … participants sit in a circle and discuss the specified topic with each participant having the opportunity speak in turn sequentially around the circle without being interrupted … Next, MP interviewed the principal of each school to understand how the HEP was supported and delivered and to gather recommendations for HEP revision. … The final component consisted of two separate talking circles held with (i) teachers and (ii) parents to engage and explore the facilitators and barriers that have contributed to the HEP delivery, and to seek recommendations for HEP revision. … Throughout the project, the study team presented to the wider Kahnawake Schools Diabetes Prevention Project research team and the Community Advisory Board at their respective monthly meetings to update everyone on progress, and allow for discussion and interpretation of preliminary findings and recommendations for the next stages.* (Kholghi et al., 2018, p. 82)

Research Objective 3: Summarize the Changes and Trajectory, if any, of the Roles of Knowledge Users during the Education Research Process

Collating and charting a list of enablers and barriers in research use can aid to diagnose limitations and identify facilitators, acting as a guide to gauge change and progress (Walsh et al., 2019). Identification of enablers and barriers to engagement of knowledge users, when compared with those from Levin's (2008) discussion paper, could provide some indication of efforts by research producers to develop strong KMb engagement practices and improve previously lacking research and practice connections.

Close to half of the studies reported various factors that enabled or obstructed engagement. The most common enabling factor was developing a trusting relationship between knowledge producers and users. This factor addresses the findings from the Levin (2008) discussion paper that found "little evidence ... of any effort to build interaction or face-to-face connections between researchers, mediators, and users" (p. 20). This scoping review instead reveals a shift towards the fostering of interpersonal relationships between knowledge producers and users. These efforts included having a previous working relationship between the producer and user (McQuirter Scott et al., 2015) or an approach that is grounded in equality between producer and user (Reid, 2015). At least two studies (McQuirter Scott et al., 2015; Verlaan et al., 2010) noted that direct contact between producers and users promoted the development of trust and familial relationships, which granted all involved more flexibility in addressing unexpected changes in scheduling or lesson planning when they arose.

The knowledge producers' intent of engagement (attitude towards knowledge users in fostering a culture of collaboration) and regular guidance and support by knowledge producers were also key to successful implementation. Establishing a culture of non-judgement and equal participation between and among knowledge producers and knowledge users during the discussions encouraged all involved to actively contribute to "a respectful discourse, a consideration of what might be best for society or the community instead of just an individual" (Kholgh et al., 2018, p. 82). Affirmations and constructive feedback were also helpful in boosting the confidence of users during the research process (McQuirter Scott et al., 2015). This facilitated the creation of a positive and constructive culture of learning during the research process for all involved.

Support by school leadership and administration was also identified as a factor in enabling engagement. This factor addresses the weak KMb practices of user organisations such as school districts or ministries of education, as highlighted by Levin (2008). Mady (2012) remarked that those in leadership positions served as "gatekeepers" (p. 5) and their support or disinterest in research sets the tone for those working in their purview. The support by systems and administration in promoting "cultures of inquiry" (Reid, 2015, p. 164) helps to create a conducive school culture that fostered interest about (Reid, 2015; Verlaan et al., 2010) and participation in (Cantalini-Williams et al., 2017) research. By extension, the willingness of school administrators to personally participate in the research endorses positive mindsets toward research (Martinovic, 2012), allows for research to be rethought by those immersed in the school ecosystem, and attunes to meet the needs of the school and classroom (Verlaan et al., 2010, p. 564).

The most common barrier to engagement was limited time and resources, of both the knowledge producers and users. The lack of resources and capacity was similarly noted in Levin's (2008) discussion paper. According to Levin (2008), effective KMb calls for dedicated and sustained effort and that "[t]his effort requires resources and infrastructure, much of which does not yet exist" (p. 9). Building positive relationships between researchers and their knowledge users requires thoughtful planning and deliberate engagement which in turn requires time and resources. For research producers, research projects have restrictive schedules, and this can limit sustained engagement with knowledge users. As Briand-Lamarche et al. (2016) points out,

> *Several principals said they would have liked to be able to free up teachers in their schools more often to foster development of a culture of collaboration and RBI [research-based information] integration, but that there were not enough resources or time for this. Several participants also reported that lack of time impeded their uptake of the tools and resources provided by the project as well as their availability to devote themselves to the project or to collaborate with their triad colleagues to spread what they had learned to others in the school* (p. 175).

Furthermore, teachers reported that their responsibilities to the classroom limited their participation in classroom research (Martinovic et al., 2012). Ng et al. (2015) also remarked that "the majority of [the] funding went toward teacher release-time" (p. 18) to allow teachers to actively participate in the different activities that were part of the research and acknowledged having a longer research timeframe and

scheduling more time for sustained interactivity would also allow for a “more relational collaboration” between the researchers and the school boards (p. 20).

Another significant barrier that emerged from the data was a lack of shared understanding between knowledge users and knowledge producers (Mady, 2012; Martinovic, 2012). This linkage gap could, in turn, limit knowledge users’ exposure to inquiry use, seeing theory and practice as unrelated binaries (O’Mara & Gutierrez, 2010) and contribute to low levels of trust and interest among users in evidence (Levin, 2008).

Other reported barriers included the lack of alignment between researchers and knowledge users in leadership positions (Ng et al., 2015; Verlaan et al., 2010), the lack of a research culture in schools (Martinovic et al., 2012), and the lack of training programs in schools (Mady, 2012; Martinovic et al., 2012). Levin (2008) argues that “the desire and capacity for [research] use” are just as important as the production of research itself (p. 8).

Discussion

This scoping review has gathered a rich set of findings from the 28 studies examining the roles of engagement of knowledge user in current KMb research. The low average article sample size for each year meant that it would be difficult to reliably compare the trajectory of engagement of knowledge users on a year-on-year basis which could be indicative that the use of KMb or KMb-related strategies in

education research is not as prevalent as I hypothesized. However, this does not take away from the richness of the dataset as a whole.

The contextual data on the subject area of the 28 studies corroborates Levin's (2008) statement that KMb is a "highly interdisciplinary activity" (p. 15). The difficulty in interdisciplinary work is driven by the inherent differences between disciplinary concepts, methodologies and theories of even adjacent academic fields (Menken & Keestra, 2016), which is then further complicated by the social dynamics within complex systems, among researchers, and between knowledge producers and knowledge users. This insight supports the imperative for knowledge producers to engage knowledge users to tap into their specific domain insights and tacit experiences that knowledge producers themselves might not be privy to, and to also allow knowledge users to appreciate the research process and find ways to incorporate increased and lasting use of research evidence into standard practice and processes (Cooper & Levin, 2010; Levin 2008).

The findings indicate that there is a diverse group of knowledge users and stakeholders in education research. This echoes Levin's (2008) note that "literally thousands of thousands of organizations, from huge corporations to tiny community groups, are involved in work of this kind at least to some degree" (p. 5). This observation highlights the importance for knowledge producers to understand and to take into consideration the distinctly different roles, rules, values, and cultures among all who engage with education knowledge (Bogenschneider & Corbett, 2010; Roger, 2007; Shankoff, 2000). For example, the distinction of working within or

outside a school environment can change how these knowledge users access and engage with the research, their perception of research, how they might realistically use that research, and how knowledge producers should work with and support them (Cooper & Levin, 2010, Young et al., 2016).

The data set revealed that knowledge users were engaged across the four main phases of the research process, with them being engaged most frequently during the search and data collection phase. As briefly alluded to in the earlier section, the low levels of engagement at the knowledge dissemination and application phase of the research process could simply be that dissemination and application often occurs upon the completion of the research and are thus not reported by researchers in journals. This is supported by Cooper and Levin (2010) who found a lack of empirical studies that reported on researchers and their KMb strategies (p. 359). With the increased attention to KMb plans and partnerships, it would be purposeful for authors to report in academic literature how they operationalise and enact their KMb activities. Future reviews could be conducted to document the engagement of knowledge users at the end of or post-research. In addition, future research could formally evaluate how engagement at the different phases of the research process influences research impact.

With more than a third of the studies including engagement with knowledge users in at least three or all four stages of the research process, this is a positive sign of efforts of the cultivation of iterative relationships between knowledge producers and knowledge users. There are insights we could glean from the four studies that

involved knowledge users in all four stages of the research. First, although the timing, participants and context of each of the studies were different, all four studies featured a collaborative approach in their research design. This included implementing a collaborative inquiry methodology (McQuirter Scott et al., 2015), creating professional learning communities that include teachers, researchers and teacher candidates (Ng et al., 2015) and a participatory research approach (Kholghi et al., 2018). Kholghi et al. (2018) highlighted that “deliberate engagement methods” were used not only because such methods were culturally appropriate for the knowledge users in that study, but also because these have the “added advantage of soliciting valid information” when working with small participant numbers (p. 82).

All four studies also indicated that knowledge producers engaged knowledge users and/or stakeholders in soliciting their insights with the development of the research project or discussing suggestions for next steps and/or future development. McVey et al. (2009) provide an example of the knock-on effect that the engagement of knowledge users and stakeholders can have on a study.

> *An advisory committee was created at the outset of the study, consisting of stakeholders from a national eating disorder association, health and physical health associations, public health agencies, and school boards. Its purpose was to exchange knowledge about the content and feasibility of the program and the plans for the dissemination of study findings. Through these established community contacts, participating public health agencies with an interest in the prevention of disordered eating were identified and assigned to either the*

intervention or comparison group with the flip of a coin. At this time, their affiliated school boards were then targeted for teacher recruitment. (p. 9)

Together these studies suggest that an appropriate research design, coupled with a considerate researcher intent, can aid in an iterative and direct engagement between researchers and research end-users. This largely confirms conclusions from previous studies on successful research-practice/policy partnerships (O'Mara & Gutierrez, 2010).

In order to strengthen research-practice relationship, Levin (2008) asks, "what works to improve [KMb]?" (p. 10). Factors identified in this review that facilitated the engagement of knowledge users in the research process included: building a trusting relationship; establishing an open, equal, and collaborative community; and working with school leadership to promote research participation. Having face-to-face conversations between knowledge producers and users to build trust, provide regular opportunities for questions and answers, or provide institution-specific summary of findings are relatively simple actions that any knowledge producers can enact in their research.

This review has also laid out the barriers that hamper engagement. These barriers are consistent with those in existing literature and Levin's (2008) review of KMb over a decade ago. We could instead see these barriers as opportunities to readjust our approaches to KMb work, for example, making allowances in research planning for additional time and funding to conduct user engagement activities, building personal

contacts and networks in communities of research, and being open to co-designing and co-developing research with knowledge users within those communities. It could be valuable for future research to examine the effectiveness of any of these approaches to improve engagement and research impact.

Conclusion

The present study sought to answer how, in the years since Levin's review (2008), the research producer-user connections in KMb research on Canadian K-12 teaching and education policy have changed. There continues to be many different types of knowledge user groups involved in education research. Engaging with these different groups and their various research needs has meant that KMb remains a highly interdisciplinary activity. With knowledge users being engaged, often repeatedly, across the four main phases of the research process, there are signs of progress in building the kind of iterative, two-way, collaborative relationships touted in KMb best-practices. It is also crucial to note that the intent of engagement is as important as the frequency of engagement.

The value of this scoping review has been its response to Levin's (2008) call "to improve our understanding of and base of evidence on knowledge mobilisation" (p. 25). This review is likely to be useful to not only KMb practitioners and education researchers, but also to any researchers in other fields interested in understanding and improving knowledge user engagement. With this in mind and supported by feedback from potential knowledge users of my research, it was suggested that I

share my findings to a greater audience, in particular to new graduate students who might be unaware of KMb and best practices for research impact. In terms of dissemination, I have presented this research at two graduate conferences and to a smaller research group. Furthermore, in addition to standard academic practice of submitting this review for publication, I also intend to work with a lecturer for a mandatory graduate research methods course at a faculty of education to speak about KMb.

There are limitations in my scoping review process. Inevitably in any review, not all related research are identified. This could be due to KMb-related education studies that were not identified by the authors as KMb-related research, other KMb terms and keywords that were not on my list, limitations of publications in English, and limitations to peer-reviewed journal articles. The last parameter meant that I might not have identified important KMb literature or KMb processes that would have otherwise been captured in books, book chapters, KMb-related websites and blogs, and other grey literature. These could be areas for subsequent research and complementary reviews in the future. Further, the findings of the scoping review are limited by the details reported within the 28 articles. Case in point, end or post-research dissemination strategies involving knowledge users could have been underreported or not documented at all. Such details might be included in additional files or appendices that could either be in grey literature or generally not included in journal articles.

In conclusion, my findings reveal that there have been efforts made to address gaps that were present in the field of KMb in 2008, particularly around building reiterative engagement loops between knowledge producers and users. There have also been attempts to move away from the producer-push model of research to an increasing collaborative model of soliciting user insights on the development and diffusion of evidence. This review also sets the foundation for potential future research on producer-user engagement as it relates to research impact. As with any growing academic field, the line to success is not always linear. It is important that both knowledge producers and users, particularly in the KMb field, continue to make strides in engaging with each other. Particularly, research in the KMb field should aim to be forerunners in creating strong-reiterative-research-producer-user-connections that maximise the impact of research and seed long-term sustainability of research results (Cooper et al., 2018).

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Chapter 5: Conclusion and Future Directions

The present study sought to answer the question, in the years since Levin's review (2008), how have the research producer-user connections in KMb research on Canadian K-12 teaching and education policy changed? Through a scoping review, I analysed the engagement of knowledge users in KMb research on Canadian K-12 teaching and education policy in the past 13 years.

In the 28 studies examined, over 95% of the studies engaged knowledge users, who included teachers, principals, healthcare professionals and school administrators. They were most frequently engaged at the search and data collection phase of the research. Encouragingly, many of the studies also engaged knowledge users at the start and end of the research process. This allowed for more relevant research to be conceptualised and initiated, and for findings to be contextualised and adapted to meet the goals and needs of knowledge users. There are many different ways in which engagement can happen and finding a happy medium could prove meaningful to both knowledge producers and users. Future research could look at formally evaluating how engagement at the different phases of the research process influences research impact. Research could also examine the effectiveness of any of these approaches in improving engagement levels and research impact.

In my own engagement with my pool of knowledge users, I have found the interactions informative and illuminating. Although my questions were generally of a practical nature, for example, around the relevance of my research to different

knowledge users or the robustness of the scoping review, I received input on the possibilities of future research that I had not considered. I also received tales of past experiences around research use in the classroom. The story of Connie at the start of this thesis was generated from explaining KMb to knowledge users outside of academia, who were generally unaware or uninterested in the intricacies of research. Many were able to better understand KMb and the different social processes and collaboration that is needed to move, translate, promote, and facilitate the use of research knowledge into spheres of policy and practice.

I felt awkward and nervous when I first approached potential knowledge users of my research. There is a sense of vulnerability in sharing one's work with others, particularly individuals with more professional and/or explicit experience on the subject matter. Instead, I found that the knowledge users were excited to share their knowledge and insights with me, with some mentioning that they faced a similar sense of trepidation when commenting about KMb, a research area they were unacquainted with. And in this, I wholeheartedly agree with the findings of the review that a conscious effort to build an open and trusting relationship is beneficial to an effective knowledge producer-user collaboration. My experience also highlights the misnomer of researchers being the absolute experts. Both producer and user bring to the table their own unique set of expertise. Having recursive engagement between producer and user can help to surface complementary elements between them to work towards a higher quality of education in our schools. I believe this is the heart of KMb.

In addition, in bringing these findings and conclusions to my pool of knowledge users, they suggested ways to improve the readability of this review, particularly to potential audiences new to KMb, and the importance of sharing my findings to a greater audience, in particular to new graduate students who might be unaware of KMb and best practices for research impact. In terms of dissemination, in addition to the submitting the manuscript in the preceding chapter to the journal *Evidence & Policy*, I have presented this research at two graduate conferences and to a smaller research group. Upon successful publication, I intend to submit my findings to a professional academic conference. I also intend to work with a lecturer for a mandatory graduate research methods course at a faculty of education to speak about KMb.

If I could speak to Connie, the fruit and grammar researcher from Chapter 1, I would recommend that she approach a school principal or school board administrator as the next step to remedy her situation. Through their school and teacher networks, they are likely to know teachers who found grapes to be an ineffective tool in their classrooms. Connie could work with teachers and school leaders to conceptualise and design a pilot project of bananas that is tailored to the grammar needs of those classrooms. Furthermore, as school leaders and administrators are considered important enablers to research adoption, teachers might be more willing to consider implementing a different teaching method in their classrooms using bananas, knowing that they have the support from their school leaders. Early engagement will also allow Connie, teachers, and principals to work around the school's academic calendar and funding cycle, attending to issues of time and resource limitations. It will be important for Connie to continue engaging with the

teachers throughout the research process. This will allow both the researcher and user to, not only work through contextual issues arising from using bananas in the classrooms, but also document research success that can strengthen overall interest and capacity around research in education settings.

The examples and findings from my review demonstrate that these scenarios are not altogether fictional and highlights the value of interpersonal networks between knowledge producers and users. As stated in the previous chapter, it is particularly important for KMb researchers to lead the change in building these producer-user connections. Researchers in this field would likely be more acutely aware of the positive effects of user engagement in promoting KMb. Fostering collaborative producer-user connections is a relatively simple and easy way to encourage the use of research evidence and to bring about powerful and positive changes in education policy and classroom practice.

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Appendix

Full citations of the 28 included studies.

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